FHWA Contract No.
DTFH61-93-C-00064

Trip Report

Europe - November/December 1994

Kan Chen

January 12, 1995

Kan Chen, Inc.
2420 Skyfarm Drive
Hillsborough, CA 94010
USA

Trip Report: Europe – November/December 1994

Kan Chen

Table of Contents

Trip Report
Europe - November/December, 1994

Kan Chen
Consultant

Introduction

This trip report is prepared as a deliverable under the FHWA Contract No. DTFH61-93-C-00064. The report will begin with a brief description of the purposes and destinations of the two-week European trip taken by the consultant in November/December 1994 during the 1st ITS World Congress. To help the reader get the essence of the report, the major observations and recommendations, based on this consultant's subjective assessment, will be presented first before a chronological account of the events and participants is given. Further details of collected information are given in the Appendices.

Purposes and Destinations

The European trip was taken from November 26 to December 4, 1994. The trip was supported mainly by the University of Michigan for the consultant to attend the First World Congress on Applications of Transport Telematics and Intelligent Vehicle-Highway Systems in Paris. While there, the consultant took a couple of DRIVE project tours to get updated information on the PLEIADES project and the STORM project; and to assist Dr. Christine Johnson, Director of the USDOT ITS Joint Program Office, on a visit to the Organization for Economic Cooperation and Development (OECD) and in her chairing of a special World Congress session on the U.S. System Architecture and International Responses. Thus, the places visited during the European trip include the Channel Tunnel under the English Channel (a critical link of the PLEIADES project) and Stuttgart, Germany (site of the STORM project) as well as Paris, France (location of the 1 st World Congress). This report will concentrate on the two project tours as the follow-up on the OECD visit and international responses have been reported elsewhere.

PLEIADES and the Channel Tunnel

PLEIADES (Paris London Corridor Evaluation of Integrated ATT and Drive Experimental Systems) is a DRIVE II pilot project (V2047), partly funded by the European Commission. Since the channel tunnel is a critical link in the corridor, project financing has also come from investment banks. The "corridor" within which the system trials take place comprises the strategic roads which link the M25, south eastern quadrant to the Channel crossing points at Dover and Folkestone on the English side, and the Channel port of Calais and Dunkerque to Paris through Lille in France, and to Namur in Belgium. The map in Appendix 1 showing the links among traffic information centers is also a good overview map for the region encompassed by PLEIADES. The diagram in Appendix 2 shows the flow of information among the traffic control centers, the traffic information centers (TICs) and the user interfaces.

The objectives of the PLEIADES project are to demonstrate and evaluate the application of Advanced Transport Telematics (ATT) systems for providing an integrated driver information and network management system within the Paris-London corridor. The project provides a valuable contribution to the understanding of issues related to the practical implementation of ATT systems and standards. A good technical summary of the project can be found in the World Congress Proceedings by Gilbert Batac and Steve Hoffman, "PLEIADES, a New Deal for Driver Information," (pp. 2 32 l-2 3 2 8).

The PLEIADES project was planned to run for three years, from January 1992 to December 1994. According to Mr. Batac of the French Service d'Etudes Techniques des Routes et Autoroutes, PLEIADES is likely to continue into DRIVE III in 1995 under the Fourth Framework of the European Commission. Although PLEIADES is a pilot project, it provides the testbed for other projects; e.g., SAVOIR a geographical information system (GIS) based on the public telephone network and shared by several users (see World Congress Proceedings pp. 355362). In addition, Mr. Batac indicated that the products and services tested in PLEIADES can be implemented within six months after a go-ahead deployment decision is made. With the infrastructure support from PLEIADES, the traveler information system of CARMINAT is expected to be marketed by 1996. The basic CARMINAT in-vehicle unit will probably be priced around $400; and the premium unit (including a map database provided by EGT) around $1,500.

The Channel Tunnel (also known as Chunnel of Eurotunnel) was open at the end of November for passenger vehicle shuttle only on a limited basis — for special project tours and private cars owned by shareholders, etc. However, it had been open for some time for both railroad and trucking vehicles. The same train can go from Paris to London because the rail gauge is standardized for all of Europe except Spain and Portugal. On the other hand, there are four kinds of power supplies in the Chunnel. It was said that the lack of standards has resulted in 25% higher costs in power supply installations.

The Chunnel has a really impressive layout and performance. The tunnel traveling time was 35 minutes with an average speed of 100 kilometers per hour and a maximum speed of 100 miles per hour. (The figure of 187 mph maximum speed reported by a Dallas, Texas newspaper was probably inaccurate.) It was interesting to see the permanent display of a tunnel drilling machine on the French side and to hear that the machine had actually been invented in Japan. (The Chunnel is 25 to 45-meter below the bottom of the sea.)

Although the traveling time within the tunnel area was only 35 minutes, the total crossing time was much longer (close to one hour and a half) because there were stops at each side of the tunnel for toll collection and for border checking routines. (A visitor in the consultant's touring group was not allowed to go through the tunnel because he forgot to bring his passport.) It appeared that the Chunnel operation could eventually benefit from ITS services of electronic toll collection and electronic preclearance. When this topic was discussed, those involved in the PLEIADES project indicated some knotty institutional problems. For example, even with European economic integration which would eliminate customs restrictions, the responsible agencies still want to stop the vehicles to check drug traffic and suspected terrorists.

Even with the delays in the checking process at the border crossing, the Chunnel saves a great deal of traveler's time. Thus, although the charge for passenger vehicles was yet to be set, it was anticipated that it would meet ferry competition, which ranges from 900 to 1,600 francs, averaging 1,260 francs (or about $230).

Another interesting problem in the Paris-London corridor traffic information management has to do with the bilingual (English and French) variable message signs. At expressway speed, some

drivers experienced problems in quickly focusing on the text in their native or preferred language. It appeared to this consultant that this would be an excellent application of multi-color VMS displays (not only for Europe but also for selected U.S. regions). However, the PLEIADES personnel did not seem interested in this solution, perhaps due to the high cost and the fact that no obvious European vendors are marketing multi-color VMS displays.

According to Mr. Steve Hoffman of the Automobile Association (AA), co-author of the PLEIADES article mentioned previously, BIGTIME is the AA software for rapid creation of CMS messages, using the ALERT-C protocol. In a personal discussion with the consultant, Mr. Hoffman indicated that AA has de facto private monopoly in traffic information collection and dissemination in the United Kingdom. It was not surprising that Metro Traffic Control (MTC) had given up the UK market after a period of trial. However, MTC may have a chance in other European countries where traffic information collection and dissemination has been mainly a public agencies' role.

It is interesting to note that the PLEIADES project tour taken by the consultant on November 28 was the first of two similar tours (the other being on November 29). The first tour included 49 visitors, of which 25 were Japanese. There were only four Americans and one Canadian in the group.

STORM in Stuttgart

STORM (Stuttgart Transport Operation by Regional Management) is a German national project which is linked to the DRIVE II project QUARTET (Quadrilateral Advanced Research on Telematics for Environment and Transport) that involved the four European cities of Athens (Greece), Birmingham (UK), Stuttgart (Germany) and Turin (Italy). A basic goal of QUARTET is to reduce the overall cost of ATT (or ITS) applications in a city through system integration. The decision by the QUARTET cities to invest heavily in the introduction of an Integrated Urban Transport Environment (Urban IRTE) was made independently, but for very similar reasons. For example, modification of the modal split to increase the patronage of more efficient modes is seen as a fundamental step for reaching the program goals. The QUARTET reference model is shown in Appendix 3, in which:

DB = Database
I = Interfaces
MMU = Multifunctional modular outstations
N = Data network
S = Subsystems
sv = Supervisor functions

Each of the four QUARTET projects also has its own special features. A major feature of STORM in Stuttgart is the test of dual-mode route guidance, combining the centralized system with calculation of route recommendations at a traffic control center and transmission of the information to the vehicle through the beacon infrastructure and the decentralized system with in-car route calculation, in some cases supported by a traffic information channel like RDS/TMC. An overview of the dual-mode route guidance system is shown in Appendix 4.

The two most relevant papers in the World Congress Proceedings summarizing the technical aspects of the QUARTET and STORM projects are, respectively:

Vito Mauro, Chris Wrathall, Nikos Manolopoulos, Laurie Pickup, and Dieter Geiger, "QUARTET: Organisational Aspects and Public Acceptance of Urban IRTE" (pp. 680-687)

K.R. Schneider, D. Geiger, M. Konigsberger, N. Ayland, and G. Beccaria, "Dynamic Route Guidance in QUARTET: the Dual Mode Route Guidance Approach in the STORM Project" (pp. 2752-2759)

During the on-site introduction in Stuttgart, the STORM project was touted as one of the most comprehensive urban ITS projects in the world. STORM actually consists of six pilot projects:

Traffic information
Individual route guidance
Dynamic park and ride (P+R) information
Traffic link information
Fleet management
Emergency call system

Collectively these pilot projects are to meet the three general objectives of increasing efficiency, safety, and environmental quality.

Clearly the most unique feature of the STORM project is the dual mode route guidance, combining the Siemens Euro-Scout system (used exclusively in the urban center installed with beacons) and the Bosch TravelPilot system (used outside the beacon areas). The latest version of TravelPilot was deployed, using arrow rather than map displays for driver interface. Although the STORM project involves a large consortium of organizations, including Siemens, Bosch, Daimler-Benz, Hewlett Packard, Alcatel, etc. as well as the national and local transport authorities, Siemens plays an important leading role, especially in dual mode route guidance. Mr. Dieter Geiger from Siemens was the chief spokesman for the project briefing, answering most of the questions during discussion.

To this consultant who first saw the Ali-Scout system in Berlin in 1989, the progress demonstrated in Stuttgart was not very impressive. For example, the input of randomly chosen destinations for route guidance was still through the cumbersome entry of latitude-longitude coordinates (as compared with the Zexel system on the U.S. market using the much easier system of naming the city, street, and house numbers). The cost of in-vehicle units (IW) was quoted as the sum of the Euro-Scout IVU (1,800 to 2,000 DM) and the TravelPilot MJ (6,000 DM). This total IVU cost of over $5,000 did not seem to bode well for the dual mode system. When this consultant raised the question whether other options were being considered, he was told privately that Siemens had contacted Zexel two weeks ago for potential replacement of TravelPilot by the Zexel IW (the latter having been marketed in the U.S. for less than $2,000). A couple of days later, on December 1, a joint announcement by Siemens and Zexel was made at the World Congress confirming the new cooperation between the two companies in the route guidance area.

Although no definite answers were given to any planned schedule for dual mode guidance implementation, the general impression given was that COPILOT, the holding company supplying beacon infrastructure for Euro-Scout route guidance in Germany, would finally finance the beacon system in Stuttgart in early 1995 after much and repeated delays. Siemens seemed determined to bring dual mode route guidance to the market by December 1996. Eventually a merger between Euro-Scout and SOCRATES (vehicle-

based system using GSM for digital cellular communications) is possible. Mr. Geiger's opinion was that the challenge was basically institutional and "we must force the government to make right decisions."

At the traffic control center for Euro-Scout in the STORM project were several Hewlett Packard computers. The one used to store the map database for route guidance has a storage capacity for 300 megabytes. Three kinds of link times are stored: historical, current, and predicted, the last being at 5-minute time intervals. Evaluation of the STORM project was to be done by objective parties at universities and consulting firms.

It is interesting to note that the STORM project tour taken by the consultant on November 29 was the second of two similar tours (the other being on November 28). This second tour included 3 1 visitors, of which 24 were Japanese. This consultant was the only American in the visiting group.

Observations and Recommendations

The project tours discussed in this report were only two of thirteen such tours offered in conjunction with the First ITS World Congress. A complete list of all 13 tours is given in Appendix 5. With limited time, this consultant was not able to cover more than two tours. However, from the observations of the two tours and the many exhibits he visited during the World Congress, this consultant was impressed by the fact that Europe had continued to demonstrate its diversity of ITS concepts, products, and services. The Channel Tunnel is a truly magnificent multimodal transportation accomplishment which can be further augmented by ITS. Ali-Scout or Euro-Scout has remained the single most important centralized route guidance system in the world, and the various options for its combination with decentralized approaches to form dual mode systems are worth continuous monitoring. There is much for the U.S. to learn from such diverse European ITS experience (both from their successes and from their mistakes or difficulties).

As a result of the political diversity in Europe, a plethora of ITS technologies and subsystems have been developed in various European countries with an interesting mix of public/private

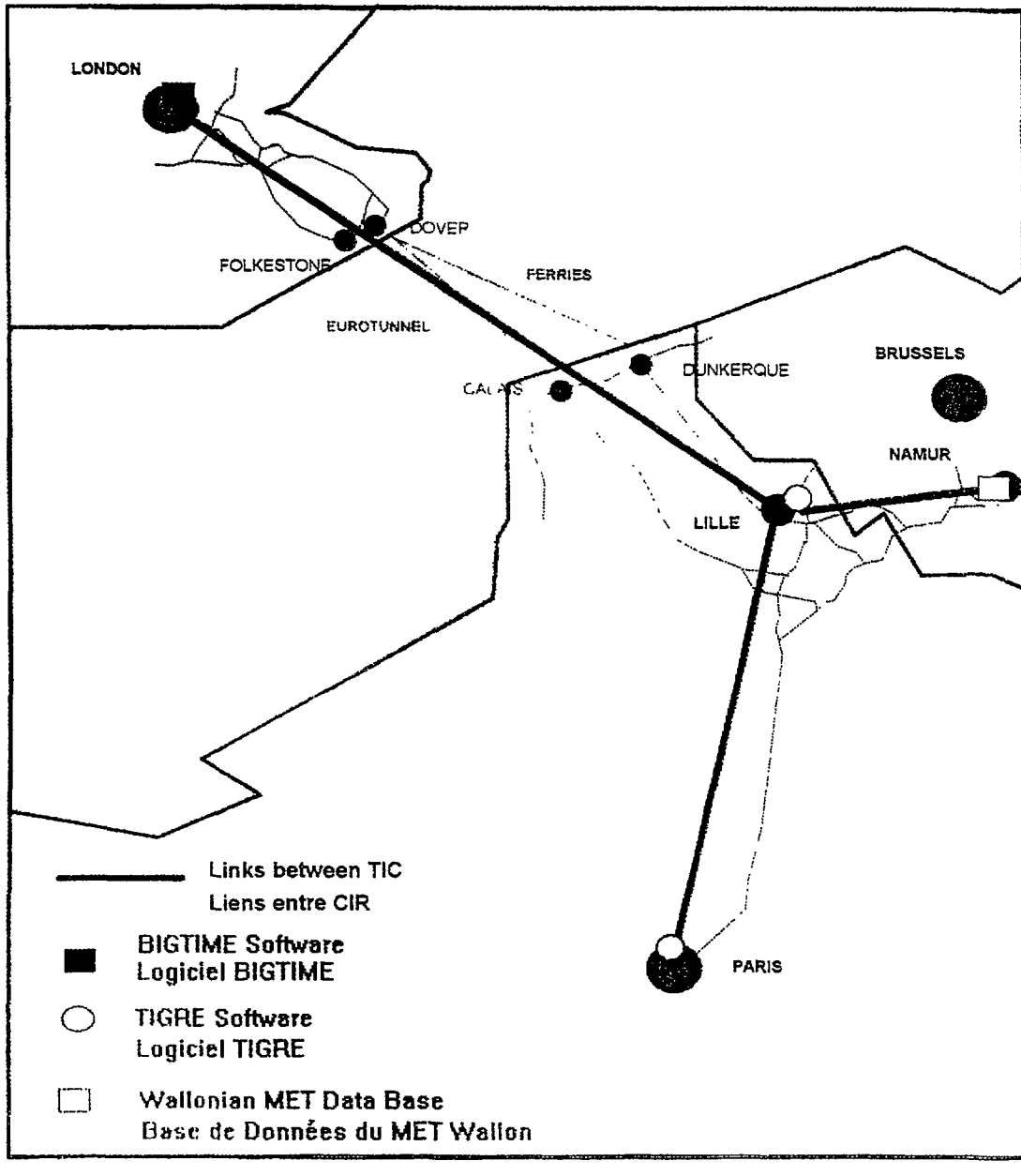
interplay, which provides another dimension of learning opportunities for American ITS. By and large, the European traffic authorities have traditionally exerted more power over the traveling public than their American counterparts have. However, there is a relatively wide latitude in this respect among the various European countries and their traffic management authorities. In addition, there is much more emphasis on privatization in some countries (e.g., the United Kingdom) than in other countries (e.g., France, where some major companies such as Renault are run by the government), even though they are all members of the market-economy OECD bloc of nations. Therefore, the U.S. has much to learn from a broad spectrum of European ITS projects.

The potential benefits for various countries to learn from one another's ITS experience have been well recognized by many internationally minded individuals in various countries. However, how this learning can be systematically organized is not a simple question to answer, and the answer may different for different countries. Some countries seem to take this learning task more seriously than others. For example, it was observed by this consultant that most of the visitors in the two European project tours reported herein were from Japan. The Japanese visitors were organized to the extent that a local Japanese travel agency in Europe was hired to provide on-site translation and logistic support. During one of the recent brainstorming sessions under the aegis of ITS AMERICA's International Liaison Committee, it was suggested that we should try to identify those Americans who have signed up for the 13 project tours and to ask each one to collect the published materials from the projects and write a few remarks on the basis of their impressions. It was also suggested that these materials and remarks be assembled as a Committee report for distribution and future reference. Unfortunately, in spite of some serious attempts, we could not get in advance the names of Americans who had signed up for the various project tours. Perhaps this should be tried again in the future, beginning with the Second World Congress in Yokohama in 1995.

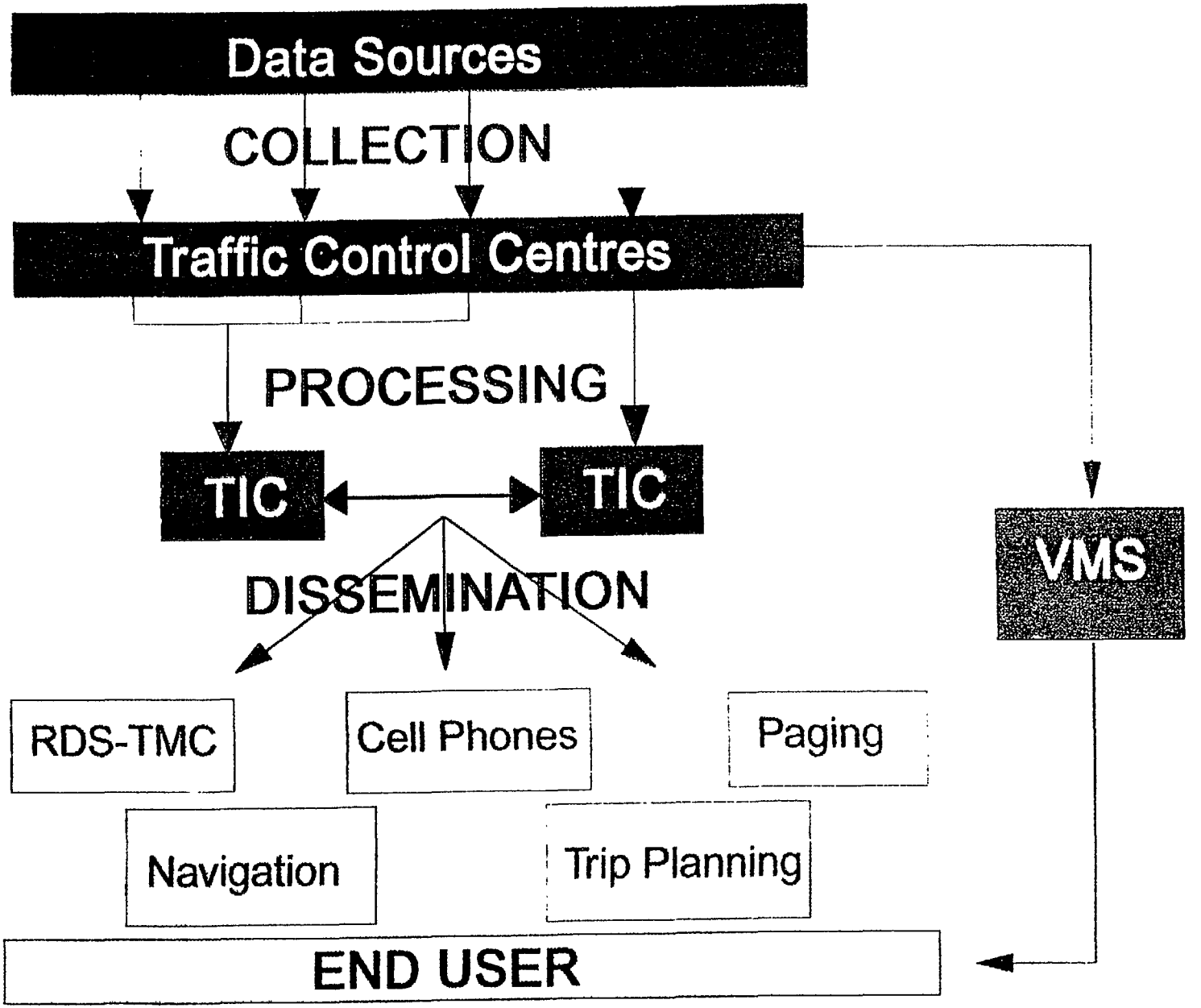
APPENDICES

Note: Materials in the Appendices are marked at the lower right corner to indicate where they belong. For example, "A2" at the lower right corner would indicate that the page is part of Appendix 2.

WP 1100
TIC - TIC LINKS
LIAISONS ENTRE C.I.R.



A1



PLEIADES V2047: THE INFORMATION FLOW

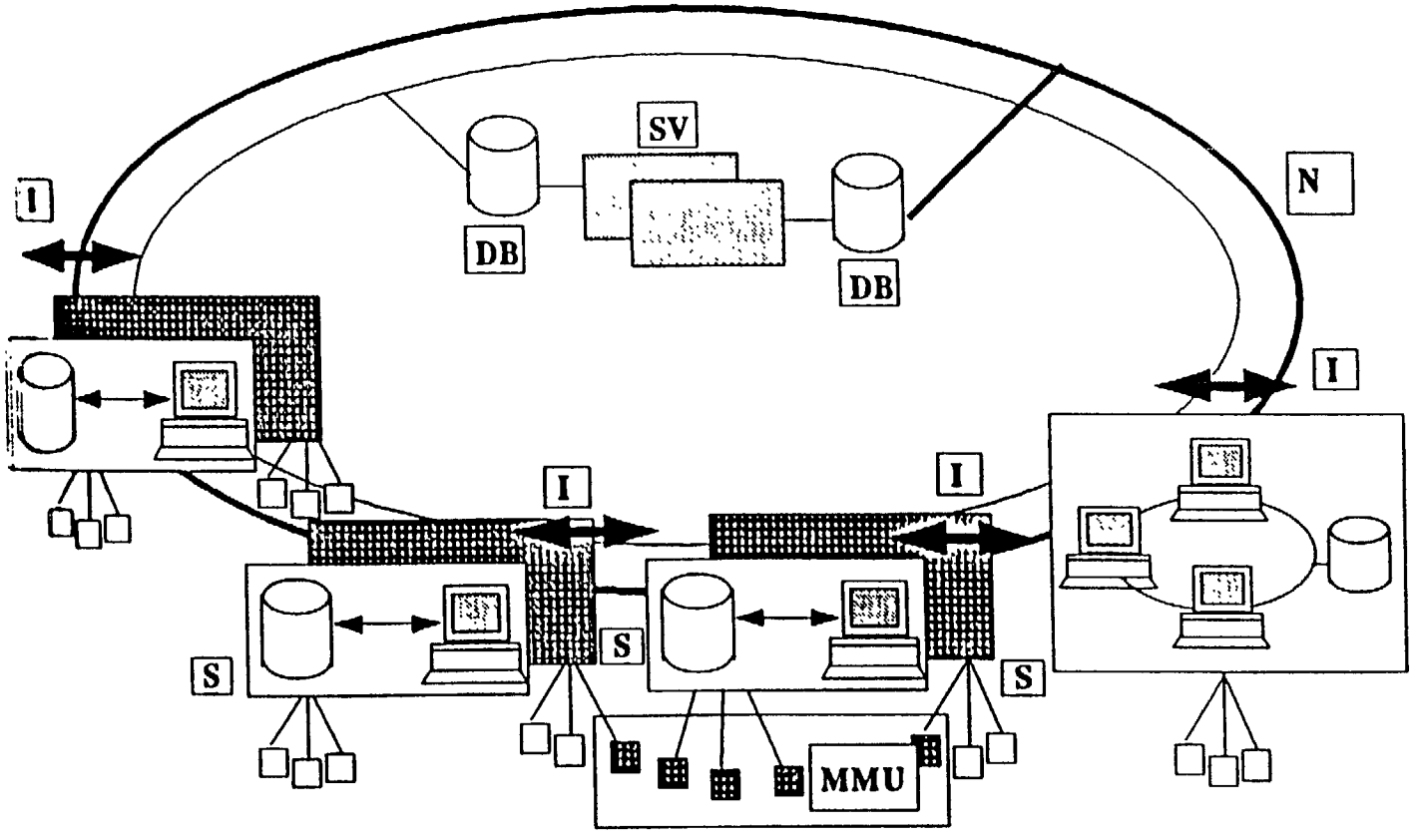


Figure 1 IRTE reference model

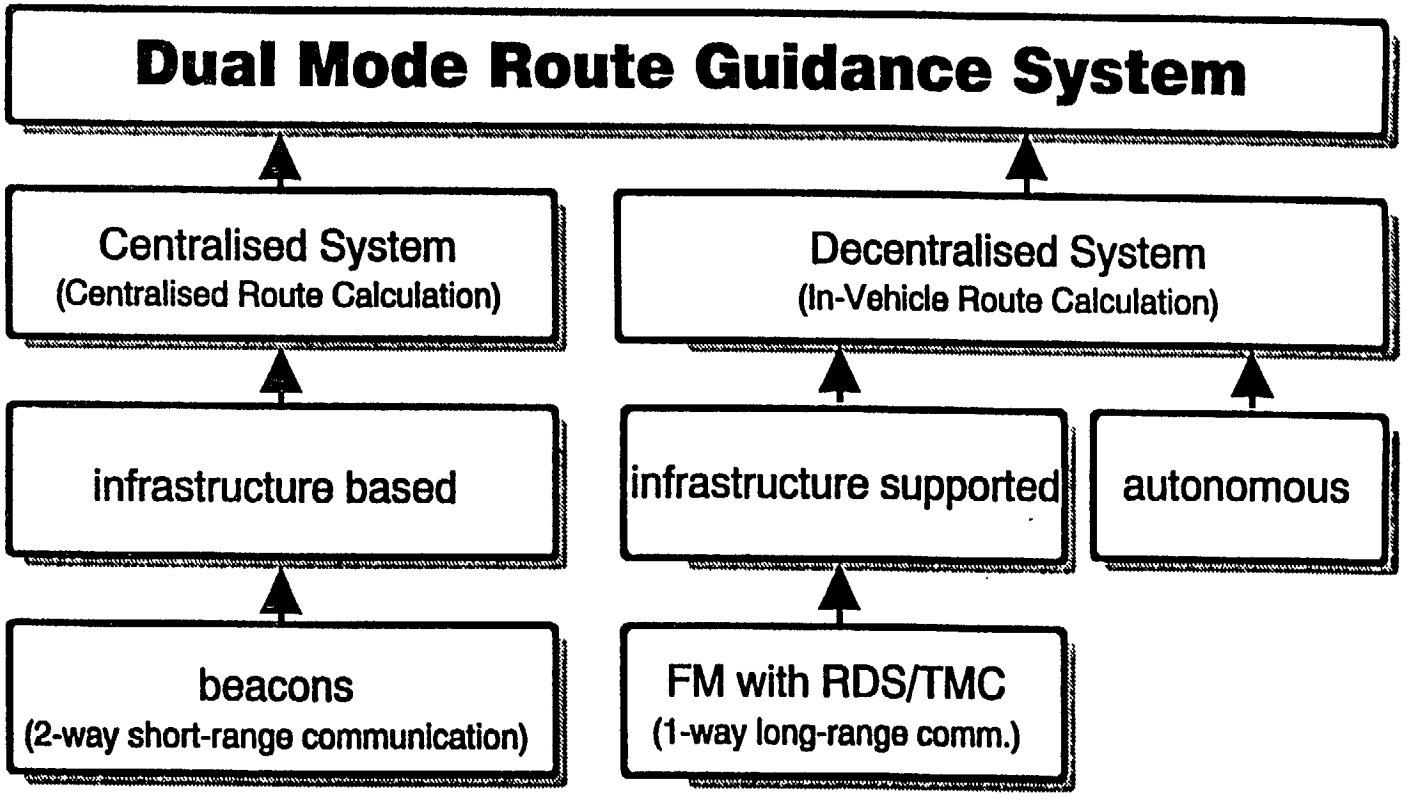


Figure 1 Overview of DMRG system

A4

List of Project Tours Conducted during the First World Congress

1. CNIR (National Information Center)
2. SIRIUS
3. Lutece Urban Traffic Management Headquarters
4. Paris Ring Road Operations Center
5. Coutevroult Toll Plaza (A4 Highway Paris-Metz)
6. TIS Generation – HAMLET 2
7. Information and Guidance Systems in Real-Time and Urban Traffic Control Center
8. SCANeR (Simulator for Cooperative Automotive Network)
9. Telematics Innovations in Lyon and Surrounding Areas
10. Telematics Innovations in the Rhone-Alps Region
11. PLEIADES and the Channel Tunnel
12. STORM in Stuttgart (Germany)
13. ADAMS, Real-Time Customized Information